WHAT IS CLAIMED IS:

1. A method for increasing the triacylglyceride content of an organism *characterised by* expressing in the organism an introduced DNA encoding a protein having glycerol 3-phosphate acyltransferase (GPAT) activity.

2. A method according to claim 1, *characterised in that* the organism is a plant.

3. A method according to claim 2, *characterised in that* the plant is an oilseed bearing plant.

4. A method according to claim 2, *characterised in that* the plant is of the genus *Brassica*.

5. A method according to claim 2, *characterised in that* the plant is *Arabidopsis thaliana*.

6. A method according to claim 1, *characterised in that* the organism is a yeast.

7. A method according to any one of claims 1 to 6, *characterised in that* the DNA encodes a protein comprising a sequence that differs from SEQ ID NO:6 but has at least 70% sequence homology with SEQ ID NO: 6 and the same function as the protein of SEQ ID NO:6.

8. A method according to any one of claims 1 to 6, *characterised in that* the DNA comprises a sequence encoding a protein comprising SEQ ID NO: 6.

9. A method according to any one of claims 1 to 6, *characterised in that* the DNA encodes a protein comprising a sequence that differs from SEQ ID NO:9 but has at least 70% sequence homology with SEQ ID NO: 9 and the same function as the protein of SEQ ID NO:9.

10. A method according to any one of claims 1 to 6, *characterised in that* the DNA comprises a sequence encoding a protein comprising SEQ ID NO: 9.

11. A method according to any one of claims 1 to 6, *characterised in that* the DNA is a DNA having a sequence as recited in SEQ ID NO: 1, or a variant thereof

having at least 70% sequence identity to SEQ ID NO:1.

12. A method according to any one of claims 1 to 6, *characterised in that* the DNA is a DNA having a sequence as recited in SEQ ID NO: 2, or a variant thereof having at least 70% sequence identity to SEQ ID NO:2.

13. A method according to any one of claims 1 to 6, *characterised in that* the DNA is a DNA having a sequence as recited in SEQ ID NO: 3, or a variant thereof having at least 70% sequence identity to SEQ ID NO:3.

14. A method according to any one of claims 1 to 6, *characterised in that* the DNA is a DNA having a a sequence as recited in SEQ ID NO: 4, or a variant thereof having at least 70% sequence identity to SEQ ID NO:4.

15. A method according to any one of claims 1 to 6, *characterised in that* the DNA is a DNA having a sequence as recited in SEQ ID NO: 5, or a variant thereof having at least 70% sequence identity to SEQ ID NO:5.

16. A method for increasing the triacylglyceride content of an organism by transforming the organism with a vector, *characterised in that* the vector comprises a DNA encoding a protein comprising SEQ ID NO: 6, or a protein having the same function comprising a sequence having at least 70% homology with SEQ ID NO: 6.

17. A method for increasing the triacylglyceride content of an organism by transforming the organism with a vector, *characterised in that* the vector comprises a DNA encoding a protein comprising SEQ ID NO: 7, or a protein having the same function comprising a sequence having at least 70% homology with SEQ ID NO: 7.

18. A method for increasing the triacylglyceride content of an organism by transforming the organism with a vector, *characterised in that* the vector comprises a DNA encoding a protein comprising SEQ ID NO: 8, or a protein having the same function comprising a sequence having at least 70% homology with SEQ ID NO: 8.

19. A method for increasing the triacylglyceride content of an organism by transforming the organism with a vector, *characterised in that* the vector comprises a DNA encoding a protein comprising SEQ ID NO: 9, or a protein having the same function comprising a sequence having at least 70% homology with SEQ ID NO: 9.

20. A method for increasing the triacylglyceride content of an organism by transforming the organism with a vector, *characterised in that* the vector comprises a DNA encoding a protein comprising SEQ ID NO: 10, or a protein having the same function comprising a sequence having at least 70% homology with SEQ ID NO: 10.

21. A non-human organism transformed with a DNA, *characterised in that* the DNA encodes a protein having GPAT activity, and the organism, after transforming, has enhanced ability to produce triacylglycerides (TAGs).

22. An organism according to claim 21, *characterised in that* the organism is a plant.

23. A non-human organism according to claim 21, *characterised in that* the organism is an oil seed bearing plant.

24. A non-human organism according to claim 22, *characterised in that* the plant is a member of the genus *Brassica*.

25. A non-human organism according to claim 21, that is *Arabidopsis thaliana*.

26. A non-human organism according to claim 21, *characterised in that* the organism is a yeast.

27. A non-human organism according to any one of claims 21 to 26, *characterised in that* the DNA encodes a protein comprising SEQ ID NO: 6, or a protein having the same function comprising a sequence having at least 70% sequence homology with SEQ ID NO: 6.

28. A non-human organism according to any one of claims 21 to 26, *characterised*

in that the DNA encodes a protein comprising SEQ ID NO: 7, or a protein having the same function comprising a sequence having at least 70% sequence homology with SEQ ID NO: 7.

29. A non-human organism according to any one of claims 21 to 26, *characterised in that* the DNA encodes a protein comprising SEQ ID NO: 8, or a protein having the same function comprising a sequence having at least 70% sequence homology with SEQ ID NO: 8.

30. A non-human organism according to any one of claims 21 to 26, *characterised in that* the DNA encodes a protein comprising SEQ ID NO: 9, or a protein having the same function comprising a sequence having at least 70% sequence homology with SEQ ID NO: 9.

31. A non-human organism according to any one of claims 21 to 26, *characterised in that* the DNA encodes a protein comprising SEQ ID NO: 10, or a protein having the same function comprising a sequence having at least 70% sequence homology with SEQ ID NO: 10.

32. A non-human organism according to any one of claims 21 to 26, *characterised in that* the DNA is a DNA having a sequence as recited in SEQ ID NO: 1, or a variant thereof having at least 70% sequence identity to SEQ ID NO:1.

33. A non-human organism according to any one of claims 21 to 26, *characterised in that* the DNA is a DNA having a sequence as recited in SEQ ID NO: 2, or a variant thereof having at least 70% sequence identity to SEQ ID NO:2.

34. A non-human organism according to any one of claims 21 to 26, *characterised in that* the DNA is a DNA having a sequence as recited in SEQ ID NO: 3, or a variant thereof having at least 70% sequence identity to SEQ ID NO:3.

35. A non-human organism according to any one of claims 21 to 26, *characterised in that* the DNA is a DNA having a sequence as recited in SEQ ID NO: 4, or a variant thereof having at least 70% sequence identity to SEQ ID NO:4.

36. A non-human organism according to any one of claims 21 to 26, *characterised*

in that the DNA is a DNA having a sequence as recited in SEQ ID NO: 5, or a variant thereof having at least 70% sequence identity to SEQ ID NO:5.

37. A vector for genetically transforming an organism, *characterised in that* the vector comprises a DNA encoding a protein having GPAT activity, and the organism, after transforming, exhibits enhanced production of triacylglycerides.

38. A vector according to claim 37, *characterised in that* the vector comprises DNA encoding a protein comprising SEQ ID NO: 6, or a protein having the same function comprising a sequence having at least 70% sequence homology with SEQ ID NO: 6.

39. A vector according to claim 37, *characterised in that* the vector comprises a DNA encoding a protein comprising SEQ ID NO: 7, or a protein having the same function comprising a sequence having at least 70% homology with SEQ ID NO: 7.

40. A vector according to claim 37, *characterised in that* the vector comprises a DNA encoding a protein comprising SEQ ID NO: 8, or a protein having the same function comprising a sequence having at least 70% homology with SEQ ID NO: 8.

41. A vector according to claim 37, *characterised in that* the vector comprises a DNA encoding a protein comprising SEQ ID NO: 9, or a protein having the same function comprising a sequence having at least 70% homology with SEQ ID NO: 9.

42. A vector according to claim 37, *characterised in that* the vector comprises a DNA encoding a protein comprising SEQ ID NO: 10, or a protein having the same function comprising a sequence having at least 70% homology with SEQ ID NO: 10.

43. A method for modifying the fatty acid composition of triacylglycerides produced by an organism, characterised in that the organism is transformed with a DNA encoding a protein having GPAT activity.